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JOHN M. GOODELL.

BURNING SMALL SIZES OF ANTHRACITE

Many years ago the late Eckley B. Coxe, the noted mining engineer and coal operator, saw the approach of much higher costs of production in the anthracite fields. He also saw the enormous waste of coal through failure to develop practical methods of burning the small sizes which were then rarely used. For many years he worked over this problem and finally developed a practicable furnace and grate for burning these small sizes, but as the time was not then ripe for its use, it was forgotten by most power plant specialists. Recently the high price of larger sizes and the difficulty of securing deliveries of them have made the use of small sizes highly desirable, and this old invention has again come into prominence. The Philadelphia Water Bureau has been one of the pioneers in this new practice, which is of real significance as a matter of national economy. From the best data available the use in Eastern Pennsylvania of these small sizes of anthracite, commercially known as No. 3 and No. 4 buckwheat, has doubled in the last four years. In other words, about 2,000,000 tons annually of fuel which formerly went to waste is now being used in power plants.

The Philadelphia Water Bureau has installed twenty Coxe stokers in the past four years under boilers aggregating in rated capacity 8400 horsepower. A combined efficiency of 70 per cent at 125 per cent of boiler rating has been obtained in all tests with No. 3 buckwheat coal having a heat value of 11,000 B.t.u. and carrying approximately 23 per cent of ash. Operating results have approached test conditions in a way that demonstrates the dependability of the stroker and the fact that it can be considered as beyond the experimental stage.

Conditions in the fuel market dictated the original choice of a stoker which could burn anthracite screenings. Prewar prices for No. 3 buckwheat averaged approximately $2.00 a long ton, or rather more than $1.00 a ton less than for bituminous with a heat value of 13,000 B.t.u. and 13 per cent of ash. Broad economic conditions created by the war have more than justified the choice of this stoker, entirely apart from the artificial prices created under the present abnormal situation.

Conditions after the war will apparently open a still wider field for stokers of this type in the contemplated power developments in the mining regions, as well as in the use of low grade fuels which must be largely developed in the future. For instance, Rhode Island lignite has already been successfully burned in an experimental way. The near future will certainly bring radical and permanent changes in all our boiler room practices and methods.

While freight charges will doubtless limit the areas beyond which low grade fuel cannot be economically transported, the chain grate stoker of the Coxe type apparently opens one practical line of investigation for many water works superintendents.

Carleton E. Davis.

COAL

There seems to be a considerable misunderstanding of what must be done by the managers of water works and other public utilities to obtain coal. All public utilities have been given a definite classification which gives them preference over many other consumers of fuel. This is a classification which gives a preference under war conditions; it does not mean a preference which will restore the conditions existing in times of peace. Nobody has the slightest justification for expecting that a preferential classification here will remove all troubles any more than our soldiers in Flanders and France had any reason for expecting sleeping cars and limousines to transport them through the enemy's lines. The coal operators are crowded to the utmost and the railways in many sections are congested. Under such conditions, inconvenience is bound to arise and the manager of the public utility who gets along best is he who sees what this inconvenience will be and provides against it.

There have been innumerable complaints from managers of utilities that coal was not delivered when it was desired but came at long intervals in large quantities which could not be stored. That condition is a war time burden which the manager must provide against. In congested districts coal can often be delivered only in large consignments, without interfering with essential war time shipments. The wise manager will provide storage somewhere for this coal; if he does not, a variety of harassing troubles are likely to visit him, and he will receive little sympathy from those who know how strained are the railroad facilities to meet the urgent demands upon them. It is impossible in many places to deliver a car or so of coal at regular intervals, without interfering with so many other necessary freight movements that national economy demands placing upon those heretofore served in this way the provision of increased storage facilities. This is their share of the war burden, so far as the coal situation is concerned.